devices are including a wider device class than the one described above. Besides, the light source used should preferably have a maximum of the emission spectrum in the 200-450 nm range. The polarizers used should be effective in both visible and UV spectral ranges, and layers should contain luminescent dyes transforming UV into visible radiation. This allows to more efficiently use energy of the sources emitting in both UV and visible spectral ranges.

Claims

1. A liquid crystal display containing a layer of liquid crystal placed between the front and the back plates, with at least one electrode and one polarizer attached to each of the plates, and a layer containing at least one dye in at least on one area, wherein either a dye emitting luminescence under action of UV radiation in the 400-700 nm band, or a mixture of at least one dye emitting luminescence and at least one absorbing dye, is used as at least of one of the dyes.

2. A display of Claim 1, wherein a source of radiation is introduced emitting in UV and visible spectral ranges, with an emission maximum in the range of 200-450 nm.

3. A display of Claim 2, wherein a radiation source is mounted from the front panel side.

4. A display of Claim 2, wherein a source of radiation is mounted from the back panel side.

a 5. A display of Claims ~~1 or 4~~ 1, wherein a layer containing at least one dye emitting luminescence is mounted on the external side of one of the plates, and the polarizer located on the same plate is placed either on its internal surface, or between its external surface and the layer containing at least one dye emitting luminescence.

a 6. A display of Claims ~~1 or 4~~ 1, wherein a layer containing at least one dye emitting luminescence is located on the internal side of one of plates, the polarizer located on the same plate being placed between the layer containing at least one dye emitting luminescence, and the liquid crystal layer.

a 7. A display of Claims ~~1 or 3~~ 1, wherein a reflector is installed mounted on the internal or the external side of the back surface of the plate, and the layer containing at least one luminescent dye is located between the reflector and the polarizer located on the same plate.

a 8. A display of Claims ~~1 or 4~~ 1, wherein the layer containing at least one dye emitting luminescence is located on the front plate, and both this layer and the polarizer located on the same plate are implemented as a single polarizing layer containing molecules of

at least one dye emitting luminescence, which are homogeneously oriented along at least one molecular axis, with the layer located on either the external or the internal side of the front plate.

Added 9.7

Sources of information referred to while drawing up the application

1. USA Patent No 5,528.398, Cl.359-68, published in 1996. – the prototype

2. USA Patent No 2,400,877, Cl. 350-155, published in 1946.

3. Japan Patent No. 1-183602 (A), G02B 5/30, G02B 1/08, published in 1989.

4. USA Patent No 3,941,901, Cl. 350-160, published in 1976.

5. Application PCT/US 94/05493, published in 08.12.94.

Abstract

The invention belongs to display units, in particular, to liquid crystal (LC) displays, and can be used in display/indicator equipment of various purposes, as well as in optical modulators, matrix systems for light modulation, etc. A liquid crystal display is proposed containing a layer of liquid crystal placed between the front and the back plates, with one electrode and one polarizer located on each of the plates, and a layer containing a dye. As the latter dye, either a single dye emitting luminescence under action of UV radiation in the range of 400-700 nm, or a mixture of one dye emitting luminescence and one absorbing dye, is used. The purpose of the invention is to achieve greater brightness and color saturation of the image, and to increase the viewing angle of LC displays up to 180° by more effectively utilizing the emission spectrum of the radiation source, in particular, its ultra-violet band.

7 formulas, 7 illustrations.